

- e. Much like *trifolium*, but with narrower skull ;
zygomatic breadth 13·8–14·8 mm. Fore-
arm 54–58·5. (Indian Peninsula.) *s. horsfieldi*.
- f. As *s. horsfieldi*, but averaging smaller exter-
nally. Forearm 52–56·5 mm. *s. ceylonense*, subsp. n.

Types :—

- M. s. medium*. Female. B.M. no. 96. 4. 15. 1. From
Singapore. Collected and presented by H. N. Ridley.
- s. majus*. Female. B.M. no. 18. 8. 3. 6. Original number
5354. Collected at Kin, Lower Chindwin, by G. C.
Shortridge. Presented by the Bombay Natural History
Society.
- s. minus*. B.M. no. 78. 6. 17. 42. From Camboja. Pre-
sented by M. Pierre.
- s. ceylonense*. Male. B.M. no. 18. 8. 3. 7. Original num-
ber 1317. Collected at Trincomalee by Major E. W.
Mayor. Presented by the Bombay Natural History
Society.

XXXV.—*Descriptions and Records of Bees*.—LXXX.

By T. D. A. COCKERELL, University of Colorado.

Xylocopa collaris, Lepeletier.♂. Sandakan, Borneo (*Baker*).

This is the form which Lepeletier described from Java as *X. dejeanii*. His *collaris* was based on females, doubtless of more than one race, but it may be restricted to the Malayan form, with Sumatra as the type locality.

Xylocopa collaris penangensis, subsp. n.

♂. (Type.)—Similar to the Philippine *X. fuliginata*, Pérez, in having the light hair covering first and basal two-fifths of second segments of the abdomen, the lower margin straight. Otherwise it is like *X. collaris*, with pale hair on thorax above, except a narrow band along anterior edge of scutellum. The metathorax has black hair. In the colour of the hair on legs and apex of abdomen it resembles *X. collaris* var. *bryanti*, Ckll., from Java, but the wings are not darker than in typical *collaris*. The thorax dorsally is very faintly greenish. The pleura has pale hair on upper part and black on the lower. The insect is a little smaller than typical *collaris*.

♀.—Differs from *X. fuliginata* in being smaller (anterior wing 16.5 mm.), with the wings darker and brilliantly violet, and the thorax anteriorly with a band of white hair. The white thoracic band is narrower and less conspicuous than in *collaris*, and sends only a small and feeble extension to the pleura.

Island of Penang (*Baker*).

Mesotrichia bombiformis (Smith).

Manila, Philippine Is., Jan. 1, 1918 (*McGregor*).

The wings are much greener apically than in one from Los Baños.

Mesotrichia confusa viridissima, subsp. n.

♀. (Type).—Larger, anterior wing 23 mm.; anterior and posterior wings brilliant bluish green.

♂.—Yellow hair of thorax above brighter; second submarginal cell a little longer.

Island of Penang (*Baker*).

Pérez cites various localities for *confusa*; Singapore may be designated as the type locality. I have both sexes from Singapore, collected by Baker. The shorter wings of the females are violaceous, apically obscure green. Exactly the same thing, determined as *confusa* by Moidl, was received from the Berlin Museum, labelled "Sikhim (*Bingham*)."
It is unfortunate that some assistant at the Berlin Museum put "Sikhim" labels on numerous bees which never came from that region.

A specimen of *M. confusa* from Trong, Siam (*Abbott*), is intermediate between the type and *viridissima*, having the long wings of the latter, but with some violaceous colour, though they are mainly green. It is certainly nearest to *viridissima*.

Trigona geissleri, Friese.

I have a male from Sintang, North Borneo; and a couple of workers collected at Singapore by Baker appear to belong to the same species. It is a black insect, with broad abdomen; legs black, but trochanters red or reddish; scape clear ferruginous; front and mesothorax polished. It has some resemblance to *T. canifrons* and *T. leviceps*, but is clearly distinct. The Bornean male has the flagellum black, but in the Singapore workers it is ferruginous, more or less dusky above. The Singapore insect should perhaps

be separated, but we should first see Bornean workers. I have not seen any publication of *T. geissleri*, but it may have appeared in Germany since the mails from that country to America were discontinued.

Trigona pallidicincta, sp. n.

♂.—Length nearly 9 mm.

Head and thorax black, the clypeus, supraclypeal area, labrum, mandibles, upper border of prothorax, tubercles, and tegulae pale ferruginous; antennae black, scape red at extreme base; sides of face covered with appressed greyish-white hair; vertex with long dark fuscous hair; thorax with short pale hair at sides, but dorsally it is mainly fuscous; scutellum with a pale (tegumentary) patch posteriorly, and middle of metathorax suffusedly reddened; front not polished, except a triangular area in front of ocelli; mesothorax shining, with three impressed lines, the lateral ones deep. Wings hyaline, faintly reddish, stigma ferruginous, nervures fuscous. Legs very pale reddish basally, otherwise dark brown. Abdomen brown, darker apically; basin of first segment, and its broad apical margin, pale testaceous, the light colour sharply defined; base of third segment broadly pallid.

Singapore (*Baker*).

Resembles *T. castanea*, Bingham, but the wings are quite differently coloured. There is a rather strong superficial resemblance to the African *T. conradti*, Fr.

Trigona melanotricha, sp. n.

Worker.—Length about 7.5 mm.

Black, very robust, with rather long and coarse black hair; head broad; clypeus and mandibles obscure reddish; hair of face dark, the sides with thin appressed brown hair; front polished and shining; cheeks with thin brown pile; scape in front and flagellum beneath dull red, third antennal joint entirely bright ferruginous; mesothorax and scutellum shining; tegulae dark reddish. Wings hyaline, basally orange-fulvous, nervures and stigma clear ferruginous; transverse-cubital nervures obsolete. Legs black, with coarse black hair; hind tibia very broad, fringed with very long black hair. Abdomen short and broad, shining, obscure reddish basally.

Sandakan, Borneo (*Baker*, 9222).

Related to *T. erythrostoma*, Cam., but quite distinct.

Trigona rufibasalis, sp. n.

Worker.—Length a little over 6 mm.

Rather slender, but the head broad. Black, with the mandibles dull red at apex, and tarsi red at apex; face with very thin greyish pile; front polished and shining; scape bright ferruginous; flagellum dark, reddish at extreme base, and red beneath at apex; mesothorax shining, without distinct impressed lines; hair of thorax above black but scanty; tegulæ piceous. Anterior wings with the basal half orange-ferruginous, the apical field clear; hind wings dusky throughout. Hind tibiæ not very broad for the genus. Abdomen shining black, venter with bands of black hair.

Sandakan, Borneo (*Baker*, 9225).

Somewhat related to *T. collina*, Sm., and *T. vidua*, Lep., but the wings are differently coloured, and the head and thorax are shining.

The above species of *Trigona* were received from Prof. C. F. Baker, with others from Sandakan, Borneo, and Singapore. The following key separates and records all the species represented in the series:—

- | | |
|---------------------------------------------------------------------------------------------------------------|------------------------------|
| Clear ferruginous. (Sandakan.) | <i>melina</i> , Gribodo. |
| At least the thorax or abdomen dark | 1. |
| 1. Mesothorax red, sometimes dark | 2. |
| Mesothorax pure black | 3. |
| 2. Face pale or red up to level of antennæ. (Sandakan.) | <i>apicalis</i> , Smith. |
| Only clypeus red. (Sandakan and Singapore, the malar space a little shorter in the Singapore form.) | <i>ambusta</i> , Ckll. |
| 3. Tegulæ clear testaceous; abdomen brownish. (Singapore.) | <i>pallidicincta</i> , Ckll. |
| Tegulæ darker | 4. |
| 4. Large species, with reddish clypeus, and wings basally orange-fulvous. (Sandakan.) | <i>melanotricha</i> , Ckll. |
| Smaller; or if rather large, clypeus black | 5. |
| 5. Scape black, except at extreme base; larger species | 6. |
| Scape ferruginous; smaller species | 7. |
| 6. Wings dilute fuliginous. (Singapore.) | <i>itama</i> , Ckll. |
| Wings not fuliginous. (Sandakan.) | <i>busara</i> , Ckll. |
| 7. Wings strongly reddened basally, apically hyaline. (Sandakan.) | <i>rufibasalis</i> , Ckll. |
| Wings greyish hyaline | 8. |
| 8. Larger; abdomen broad. (Singapore.) | <i>geissleri</i> , Friese. |
| Smaller; abdomen narrow. (Singapore.) | <i>valdezi</i> , Ckll. |

Megachile penangensis, sp. n.

♀.—Length about 11 mm.

Face below level of antennæ with black hair, front and

vertex with red hair, lower part of cheeks with white hair; thorax above and first abdominal segment with very bright red hair, thorax beneath with thin white hair; second abdominal segment with a narrow fulvous band, but rest of abdomen black and bandless; ventral scopa white, black on last two segments; antennæ black; mandibles quadridentate; legs black, with pale hair, red on inner side of tarsi and of anterior and middle tibiæ; tegulæ red. Wings deep fuliginous, hyaline basally.

Island of Penang (*Baker, 9277*).

Very close to *M. schauinslandi*, Alfken, and at first sight appearing identical, but certainly distinct by the much more closely and finely punctured abdomen. Prof. Baker sends me Hawaiian *M. schauinslandi*, determined by Friese as *M. umbripennis*, Smith, and this synonymy seems correct. *M. penangensis* nearly agrees with the description of *umbripennis*, but lacks the white hair-bands at sides of abdomen. Also from Penang comes *Megachile conjuncta*, Sm. (*Baker, 9273*).

Megachile facetula, sp. n.

♀.—Length about 11 mm.

Rather slender; black, including antennæ and legs, but tegulæ ferruginous; front, vertex, broad oblique bands from prothorax to below wings, and narrow sides of mesothorax, with bright ferruginous hair; lower margin of clypeus bituberculate in middle; mesothorax and scutellum very coarsely and densely rugosopunctate; ventral scopa white, black on last segment. Abdomen dorsally strongly punctured, segments 1–4 with lateral short bands of white hair, fifth with a narrow entire band. Wings basally hyaline, but otherwise dark fuliginous, splendidly iridescent, with purple colours.

Sandakan, Borneo (*Baker, 9278*).

This looks like *M. faceta*, Bingham, and is closely allied, differing by the narrower cheeks (from upper part of eyes to occipital margin much less than diameter of eye), sculpture of thorax not so coarse, and abdomen without metallic colours. Also from Sandakan comes *M. atrata fulvipennis* (Smith).

Megachile ramera, sp. n.

♀.—Length about 14 mm.

Robust; black, including antennæ, legs, and tegulæ; ventral scopa very bright ferruginous, white at extreme base; face, front, and vertex with black hair, a little white

about bases of antennæ and at each side of upper end of clypeus; cheeks with white hair; mandibles strongly keeled externally, the cutting-edge very long; clypeus broadly emarginate, the emargination crenulate, and with a median denticle; supraclypeal area flattened, polished and sparsely punctured in middle; clypeus rather closely punctured, with a smooth median line on upper part; thorax at sides, beneath, and metathorax with long white hair, but black hair in middle of mesopleura; mesothorax shining, strongly but not very densely punctured, appearing bare, but with short black hair, the lateral margins with white hair; scutellum with black hair, but a thin band of white between it and mesothorax. Wings dusky, nervures dark fuscous; tibial spurs ferruginous. Legs with mainly pale hair, ferruginous on inner side of the broadened hind basitarsi. Abdomen broad, with beautiful green and purple colours; hind margins of segments with narrow bright ferruginous hair-bands.

Singapore (*Baker*, 9274).

A beautiful species; closely related to the Australian *M. pictiventris*, Sm., but readily known by the red abdominal bands and the wholly black hair of front. Also from Singapore comes a female *M. subriparator*, Ckll. (*Baker*, 9275).

Megachile subignita, sp. n.

♀.—Length about 13·5 mm.

Not very robust; black, including antennæ and legs, tegulæ red; ventral scopa white at base, pale ferruginous in middle, black on last two segments; lower margin of clypeus gently arched, simple; clypeus densely punctured, with a smooth median line; front and sides of face with ferruginous hair, vertex with thin fuscous hair, lower part of cheeks with white; sides of mesothorax and scutellum, tubercles, upper part of pleura, and metathorax with long bright ferruginous hair; mesothorax and scutellum shining, strongly but not densely punctured, with thin fulvous hair on disc. Wings reddish dusky, nervures ferruginous, the outer ones becoming fuscous. Legs with pale hair; tibial spurs ferruginous; hind basitarsi not very broad, their inner side with red hair. Abdomen finely punctured, with greenish tints; hind margins of segments with narrow pale red hair-bands, sides of first segment heavily tufted with bright ferruginous hair.

Singapore (*Baker*, 9276).

In Friese's tables runs nearest to *M. penetrata*, Sm., but that is much larger, and otherwise different.

Paracolletes metallicus (Smith).

Males. Waipara, New Zealand, Nov. 21 (*Brittin*).

Halictus aerarius, Smith.

Males from Kobe, Japan (*Baker*).

Chelynia elegans (Cresson).

Estes Park Village, Colorado, June (*Hazel Andrews*).

Osmia pentstemonis, Cockerell.

Peaceful Valley, Colorado, at flowers of *Pentstemon*,
July 5 (*Cockerell*).

Osmia hendersoni, Cockerell.

Tolland, Colorado.

BIBLIOGRAPHICAL NOTICE.

Life and Letters of Sir Joseph Dalton Hooker, O.M., G.C.S.I.
Based on Materials collected and arranged by Lady Hooker.
[With nine] Portraits and Illustrations. By LEONARD HUXLEY,
author of 'Life and Letters of T. H. Huxley,' etc. London:
John Murray, 1918. 2 vols. 8vo. i., pp. xi, 546; ii., vii, 569.
36s. net.

AMONGST the methods of writing a biography there are two which are pre-eminent—one, the strictly chronological, which leads the reader along as the subject lived, and enables him to trace the influences which moulded the life as they occurred, and the other, which may be termed the episodic method—by describing certain episodes of the life, and treating them fully, disregarding any overlapping of dates. The present work is largely on the second plan, probably wisely chosen, but having the disadvantage of rendering the sequence of dates at times somewhat difficult to follow.

Born in 1817 at Halesworth, Suffolk, of parents and grandparents of Norfolk birth, and having a botanical atmosphere from his early days, the future Sir Joseph Hooker passed his boyhood, University career, and early training in Glasgow. Four years on H.M.S. 'Erebus' in Antarctic Seas were followed by service on the Geological Survey as botanist, and then came a still more important journey in India, particularly amongst the Himalayas in Sikkim. Here his work was so thorough that, besides his large collection of plants and seeds, the map of Sikkim which he plotted proved of invaluable help to the British military expedition of 1903.